California Environmental Protection Agency AIR RESOURCES BOARD	YANMAR CO., LTD.	EXECUTIVE ORDER U-R-028-0112 New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engines and emission control systems produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2003	3YDXL4.41D4N	4.412	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection	Crane, Loader, Tractor, Dozer, Pump, Compressor, Generator Set, Excavator

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for hydrocarbons (HC), oxides of nitrogen (NOx), or non-methane hydrocarbons plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kW-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			HC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
37 ≤ kW < 75	Tier 1	STD	N/A	9.2	N/A	N/A	N/A	20	15	50
		CERT	--	6.8	--	--	--	9	13	16

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 20TH day of December 2002.

Raphael Susnowitz

for Allen Lyons, Chief
Mobile Source Operations Division

Engine Model S mary Form

Manufacturer: **Yanmar Co.,Ltd.**

Engine category: **Nonroad CI**

EPA Engine Family: **3YDXL4.41D4N**

Mfr Family Name: **N/A**

Process Code: **New Submission**

ATTACHMENT

EO U-R-028-0112

1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930
N/A	4TNE106-DMA (71)	94.9/2500	65.2	35.8	236.4/1600	73.6	25.9	EM
N/A	4D106-1FA	84.8/2200	58.9	28.9	228.5/1500	69.8	23.1	EM
N/A	4D106E-1HC (54)	72.7/2500	47.2	25.9	177.7/1500	50.0	16.5	EM
N/A	4D106E-2HC	77.7/2500	49.4	27.1	187.6/1500	53.6	17.8	EM
N/A	4D106-1FB	84.8/2200	58.9	28.9	228.5/1500	69.8	23.1	EM
N/A	4TNE106-AMM	88.1/2300	59.1	29.9	228.5/1600	69.3	24.6	EM DD
N/A	4TNE106-SA	94.9/2500	65.2	35.8	225.7/1600	65.6	23.1	EM
N/A	4D106-1FAA	84.8/2200	58.9	28.9	228.5/1500	69.8	23.1	EM
N/A	4TNE106-TB	94.9/2500	65.2	35.8	225.7/1600	65.6	23.1	EM
N/A	4TNE106-GE	94.3/2500	64.5	35.4	232.2/1600	67.5	23.7	EM
N/A	4TNE106-FW	94.9/2500	65.2	35.8	225.7/1600	65.6	23.1	EM
N/A	4D106-1FB1	89.9/2200	63.5	30.7	228.5/1500	69.8	23.1	EM